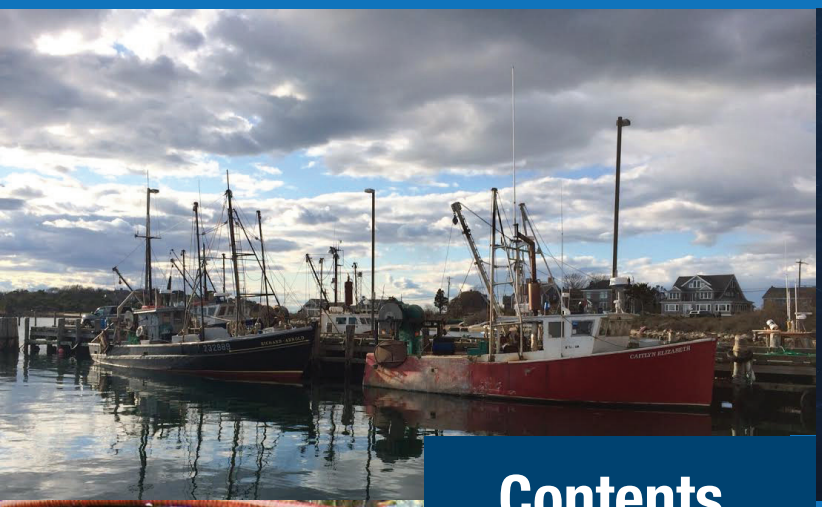
NOAA FISHERIES

Northeast Fisheries Science Center

Greater Atlantic Regional Fisheries Office

Highlights of the Climate Science Strategy

Northeast Regional Action Plan



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The Need for Action

The Northeast U.S. Shelf Ecosystem, which extends from North Carolina to Maine, and from the headwaters of watersheds to the deep ocean, supports a wide array of living marine resources from Atlantic sea scallops, one of the most valuable, to the North Atlantic Right whale, one of the most endangered. Most, if not all, of these resources — fish, invertebrates, marine mammals, sea turtles, plants, habitats, and other ecosystem components — are being affected by changing climate and ocean conditions.

In fact, the pace of observed climate and ocean changes in the Northeast U.S. is faster than in many other U.S. Large Marine Ecosystems, and future change in the Northeast U.S. Shelf ecosystem is projected to be greater than many other portions of the world's oceans. These changes in climate and ocean conditions are already creating significant challenges for the region.

The Northeast Regional Action Plan identifies key actions needed over the next five years to better understand, prepare for, and respond to impacts related to climate variability and change on this region's valuable marine resources and the many people that depend on them.

What's at Risk?

Climate-related changes are already affecting the distribution and abundance of marine resources, and these impacts are expected to increase with continued changes in our climate and ocean systems.

Species distributions are becoming out-of-sync with the spatial allocations of management. The productivity of some iconic species is decreasing, making rebuilding and recovery difficult. Some ports rely on one or two fisheries; changes in these fisheries could have dramatic consequences for the human communities connected to these ports. Despite these challenges, there are opportunities. Some species in the region are responding positively to the changing climate and ocean conditions: moving into the region and increasing in productivity. Changes in science and management can be slow, while changes in the physics, chemistry, and biology of the ecosystem are occurring rapidly. The goal of the Regional Action Plan is to speed the development of science for managers in the Northeast Region.

The Northeast seafood industry plays an essential role in the U.S. economy.
(Statistics from Fisheries Economics of the Unitied States, 2014)

Landings	Landings Revenue	Jobs	Sales Impact
1.34 billion pounds	**$1.77** billion	**308,000** jobs	**$30.9** billion

Northeast Regional Action Plan

The Regional Action Plan identifies key needs and actions over the next five years to implement the NOAA Fisheries Climate Science Strategy in this region. The Strategy identifies seven key information objectives to fulfill NOAA Fisheries mandates for fisheries management and protected species conservation in a changing climate.

Recommended Actions

Objective 1 - Identify climate-informed reference points

- Give greater emphasis to climate-related Terms of Reference and analyses in stock assessments.
- Continue development of stock assessment models that include environmental terms (e.g., temperature, ocean acidification).
- Develop climate-related products and decision support tools to support protected species assessments and other management actions.

Objective 2 - Create robust management strategies for a changing climate

- Increase social and economic scientist involvement in climate change research through multidisciplinary work on climate that includes both social and natural sciences.
- Develop Management Strategy Evaluation capability to examine the effect of different management strategies under climate change.

Objective 3 - Incorporate adaptive decision processes

- Improve spatial management of living marine resources through an increased understanding of spatial and temporal distributions, migration, and phenology.
- Continue to build industry-based fisheries and ocean observing capabilities and use information to develop more adaptive management.

Objective 4 - Project future conditions

- Work with NOAA Oceanic and Atmospheric Research and academic scientists to develop short-term (day to year) and medium-term (year to decade) living marine resource forecasting products.
- Work with NOAA Oceanic and Atmospheric Research and academic scientists to develop and improve regional hindcasts and climatologies.

The Regional Action Plan's goal is to increase the production, delivery, and use of climate-related information to help reduce impacts and increase resilience of the region's living marine resources and resource-dependent communities.

The Northeast Regional Action Plan (NERAP) identifies 15 priority actions to advance the NOAA Fisheries Climate Science Strategy at current funding and staffing levels. Theses actions build on efforts by the Northeast Fisheries Science Center (NEFSC), the Greater Atlantic Regional Fishery Office, and partners within the region to better prepare for and respond to changing conditions.

Objective 5 - Understand how things are changing and why

- Conduct research on the mechanistic effects of multiple climate factors on living marine resources with a goal of improving assessments and scientific advice provided to managers.

Objective 6 - Track changes and provide early warnings

- Develop and implement vulnerability assessments in the Northeast U.S. Shelf Region.
- Continue production of the NEFSC Ecosystem Status Report, and other related products, and improve the distribution of information from the reports through the formation of an NEFSC Environmental Data Center.

Objective 7 - Build our science infrastructure

- Maintain ecosystem survey effort in the Northeast U.S. Shelf ecosystem including the Bottom Trawl Survey, Ecosystem Monitoring Program, Sea Scallop Survey, Northern Shrimp Survey, Clam Survey, and Protected Species Surveys, and expand where possible (e.g., data poor species).
- Initiate a Northeast Climate Science Strategy Steering Group to coordinate, communicate, facilitate, and report on issues related to climate change and living marine resource management.
- Coordinate with other NOAA Programs and partners to link living marine resource science and management to climate science and research activities.

To learn about actions not listed and related information, please visit the Regional Action Plan:
www.st.nmfs.noaa.gov/ecosystems/climate/rap/northeast-regional-action-plan

Moving Forward

Implementing this plan will increase NOAA Fisheries' ability to provide the climate-related information needed to better understand, prepare for, and respond to climate effects on marine resources and the people who depend on them.

The actions will help:

- Track climate related changes.
- Produce better seasonal, annual, and decadal forecasts.
- Identify effective management strategies in the face of changing climate and ocean conditions.
- Provide managers with the information they need for climate-ready decisions.

A critical element of this Action Plan is partnerships. The challenges are great, the issues are complex, and resources are limited. Partnerships are essential.

By working together, we can reduce the impacts of changing climate and ocean conditions on living marine resources and increase the resilience of these resources and the people, businesses, and communities that depend on them.

More Information

Regional Action Plan
www.st.nmfs.noaa.gov/ecosystems/climate/rap/

NOAA Fisheries Climate Science Strategy
www.st.nmfs.noaa.gov/ecosystems/climate/national-climate-strategy

Northeast Fisheries Science Center
www.nefsc.noaa.gov

Greater Atlantic Fisheries Regional Office
www.greateratlantic.fisheries.noaa.gov

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